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Hermann Ney has been working in the field of speech recognition, natural language processing, and stochastic modeling for more than 20 years and has authored and co-authored more than 200 papers in journals (IEEE Transactions, Speech Communication, Computer Speech and Language, Computational Linguistics,...), international conferences (IEEE Int. Conf. on Acoustics Speech and Signal Processing, Europ. Conf. on Speech Technology, Int. Conf. on Spoken Language Processing, Annual Meetings of the Assoc. of Computational Linguistics, ...) and books.

He received the Diploma degree (1977) in physics from Goettingen University, Germany, and the Dr.-Ing. degree (1982) in electrical engineering from Braunschweig University of Technology, Germany. In 1977, he joined Philips Research in Germany. In 1985, he was appointed department head.

All of his career at Philips was in research and advanced development of basic technology for pattern recognition, speech recognition and spoken language systems. From October 1988 to October 1989, he was a visiting scientist at Bell Laboratories, Murray Hill, NJ. In July 1993, he joined the computer science department of RWTH Aachen (University of Technology) as a full professor. His responsibilities include planning, directing and carrying out research for national, European and industrial sponsors and supervising PhD students.

His group has made significant contributions to the areas of speech recognition and of language translation and has been involved in many European projects on speech recognition and translation. The group participates in international evaluation campaigns on speech and language technology, where the co-operating partners are research groups like CMU Pittsburgh, MIT Cambridge, IBM Research and Microsoft Research.

Hermann Ney is a member of many scientific committees and has been or is on the editorial board of the leading international journals in the area of human language technology (e.g. member of the IEEE speech technical committee, associate editor of the IEEE Transactions on Speech and Audio Processing). He will be a co-chair of the upcoming IEEE/ACL Workshop on Spoken Language Technologies in 2006.

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# Complete List of Publications

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## 1 BEST PAPER AWARDS

- L. Welling, H. Ney: Formant Estimation for Speech Recognition. IEEE Trans. on Speech and Audio Processing, Vol. 6, No. 1, pp. 36-48, Jan. 1998.
- R. Schlüter, W. Macherey, B. Müller, H. Ney: Comparison of Discriminative Training Criteria and Optimization Methods for Speech Recognition. Speech Communication, Vol. 34, pp. 287-310, May 2001.
- F. J. Och, H. Ney: Discriminative Training and Maximum Entropy Models for Statistical Machine Translation. 40th Annual Meeting of the Ass. for Computational Linguistics (ACL), Philadelphia, PA, pp. 295-302, July 2002.
- D. Keysers, T. Deselaers, H. Ney: Pixel-to-Pixel Matching for Image Recognition using Hungarian Graph Matching. DAGM-Jahrestagung (Deutsche Arbeitsgemeinschaft für Mustererkennung), Tübingen, Germany, Springer LNCS Vol. 3175, pp. 154-162, Aug./Sep. 2004.

## 2 PUBLICATIONS IN JOURNALS

1. H. Ney, P. Haasen: Die Statische Reibungsspannung in Mischkristallen. Nachrichten der Akademie der Wissenschaften in Göttingen, No. 3, pp. 27-29, May 1977.
2. H. Ney, R. Labusch, P. Haasen: Measurement of Dislocation Velocities in Cu-Al Single Crystals - II. Acta Metallurgica, Vol. 25, pp. 1257-1269, 1977.
3. M. H. Kuhn, H. Ney, R. Geppert, R. Gierloff: Automatische Zugangskontrolle mit Hilfe der 'akustischen Unterschrift'. VDI-Zeitschrift, No. 4, pp. 125-130, Feb. 1980.
4. H. Ney: Bestimmung der Zeitverläufe von Intensität und Grundperiode der Sprache für die automatische Sprechererkennung. Frequenz, pp. 265-270, Oct. 1981.
5. H. Ney: A Time Warping Approach to Fundamental Period Estimation. IEEE Trans. on Systems, Man and Cybernetics, Vol. SMC-12, No. 3, pp. 383-388, May-June 1982.
6. H. Ney: Automatic Speaker Recognition Using Time Alignment of Spectrograms. Speech Communication, Vol. 1, No. 2, pp. 135-149, Aug. 1982.
7. H. Ney: A Dynamic Programming Algorithm for Nonlinear Smoothing. Signal Processing, Vol. 5, pp. 163-173, March 1983.
8. H. Ney: Dynamic Programming Algorithm for Optimal Estimation of Speech Parameter Contours. IEEE Trans. on Systems, Man and Cybernetics, Vol. SMC-13, No. 3, pp. 208-214, March-April 1983.
9. H. Ney: The Use of a One-Stage Dynamic Programming Algorithm for Connected Word Recognition. IEEE Trans. on Acoustics, Speech and Signal Processing, Vol. ASSP-32, No. 2, pp. 263-271, April 1984.
10. H. Ney, R. Geppert, D. Mergel, A. Noll, H. Piotrowski, P. Schwartau, H. Tomaschewski: Statistical Modelling and Dynamic Programming in Speech Recognition. Sprache und Datenverarbeitung, 8. Jahrgang, No. 1/2, pp. 17-33, 1984.

11. H. Ney, D. Mergel, S. Marcus: On the Automatic Training of Phonetic Units for Word Recognition. IEEE Trans. on Acoustics, Speech and Signal Processing, Vol. ASSP-34, No. 1, pp. 209-213, Feb. 1986.
12. H. Ney: Spracherkennung im Projekt SPICOS. Informatik – Forschungs- und Entwicklungsprojekte, No. 3, pp. 102-103, 1988.
13. H. Ney, A. Paeseler: Phoneme-Based Continuous Speech Recognition Results for Different Language Models in the 1000-Word SPICOS System. Speech Communication, Sonderheft "Speech Recognition", Vol. 7, pp. 367-373, Dec. 1988.
14. H. Ney: Dynamic Programming Parsing for Context Free Grammars in Continuous Speech Recognition. IEEE Trans. on Signal Processing, Vol. SP-39, No. 2, pp. 336-341, Feb. 1991.
15. H. Ney, D. Mergel, A. Noll, A. Paeseler: Data Driven Search Organization for Continuous Speech Recognition. IEEE Trans. on Signal Processing, Vol. SP-40, No. 2, pp. 272-281, Feb. 1992.
16. H. Ney: Automatische Spracherkennung: Architektur und Suchstrategie aus statistischer Sicht. Informatik – Forschung und Entwicklung, pp. 83-97, April 1992.
17. H. Ney: A Comparative Study of Two Search Strategies for Connected Word Recognition: Dynamic Programming and Heuristic Search. IEEE Trans. on Pattern Analysis and Machine Intelligence, Vol. PAMI-14, No. 5, pp. 586-595, May 1992.
18. S. Dobler, D. Geller, R. Haeb-Umbach, P. Meyer, H. Ney, H. Rühl: Design and Use of Speech Recognition Algorithms for a Mobile Radio Telephone. Speech Communications, Vol. 12, pp. 221-229, Dec. 1993.
19. H. Ney, A. Noll: Acoustic-Phonetic Modeling in the SPICOS System. IEEE Trans. on Speech and Audio Processing, Vol. 2, pp. 312-319, April 1994.
20. R. Haeb-Umbach, H. Ney: Improvements in Beam Search for 10000-Word Continuous Speech Recognition. IEEE Trans. on Speech and Audio Processing, Vol. 2, pp. 353-356, April 1994.
21. H. Ney, U. Essen, R. Kneser: On Structuring Probabilistic Dependencies in Language Modelling. Computer Speech and Language, Vol. 8, pp. 1-38, 1994.
22. H. Ney, V. Steinbiss, R. Haeb-Umbach, B.-H. Tran, U. Essen: An Overview of the Philips Research System for Large-Vocabulary Continuous-Speech Recognition. Int. Journal of Pattern Recognition and Artificial Intelligence, Special Issue on Speech Recognition for Different Languages, Vol. 8, No. 1, pp. 33-70, 1994.
23. H. Ney: On the Probabilistic Interpretation of Neural Net Classifiers and Discriminative Training Criteria. IEEE Trans. on Pattern Analysis and Machine Intelligence, Vol. PAMI-17, No. 2, pp. 107-119, Feb. 1995.
24. V. Steinbiss, H. Ney, U. Essen, B.-H. Tran, X. Aubert, C. Dugast, R. Kneser, H.-G. Meier, M. Oerder, R. Haeb-Umbach, D. Geller, W. Höllerbauer, H. Bartosik: Continuous Speech Dictation – From Theory to Praxis. Speech Communication, Vol. 17, pp. 19-38, Aug. 1995.
25. H. Ney, U. Essen, R. Kneser: On the Estimation of Small Probabilities by Leaving-One-Out. IEEE Trans. on Pattern Analysis and Machine Intelligence, Vol. PAMI-17, No. 12, pp. 1202-1212, Dec. 1995.



26. V. Steinbiss, H. Ney, X. Aubert, S. Besling, C. Dugast, U. Essen et al.: The Philips Research System for Continuous-Speech Recognition. *Philips Journal of Research*, Vol. 49, No. 4, pp. 317-352, Dec. 1995.
27. H. Ney: Maschinelle Sprachverarbeitung und Statistik. *Künstliche Intelligenz*, pp. 27-30, No. 5, 1995.
28. S. Ortmanns, H. Ney, X. Aubert: A Word Graph Algorithm for Large Vocabulary Continuous Speech Recognition. *Computer Speech and Language*, Vol. 11, No. 1, pp. 43-72, Jan. 1997.
29. L. Welling, H. Ney: Formant Estimation for Speech Recognition. *IEEE Trans. on Speech and Audio Processing*, Vol. 6, No. 1, pp. 36-48, Jan. 1998.  
**(Best Paper Award)**
30. S. Martin, J. Liermann, H. Ney: Automatic Bigram and Trigram Clustering for Word Classes. *Speech Communication*, Vol. 24, No. 1, pp. 19-37, April 1998.
31. H. Ney, S. Ortmanns: Dynamic Programming Search for Continuous Speech Recognition. *IEEE Signal Processing Magazine*, Vol. 16, No. 5, pp. 64-83, Sep. 1999.
32. H. Ney, S. Nießen, F. J. Och, C. Tillmann, H. Sawaf, S. Vogel: Algorithms for Statistical Translation of Spoken Language. *IEEE Trans. on Speech and Audio Processing*, Special Issue on Language Modeling and Dialogue Systems, Vol. 8, No. 1, pp. 24-36, Jan. 2000.
33. S. Ortmanns, H. Ney: Look-Ahead Techniques for Fast Beam Search. *Computer Speech and Language*, Vol. 14, No. 1, pp. 15-32, Jan. 2000.
34. H. Ney, S. Ortmanns: Progress in Dynamic Programming Search for LVCSR. *Proceedings of the IEEE*, Vol. 88, No. 8, pp. 1224-1240, Aug. 2000.
35. S. C. Martin, H. Ney, C. Hamacher: Maximum Entropy Language Modeling and the Smoothing Problem. *IEEE Trans. on Speech and Audio Processing*, Vol. 8, No. 5, pp. 626-632, Sep. 2000.
36. S. Ortmanns, H. Ney: The Time-Conditioned Approach in Dynamic Programming Search for LVCSR. *IEEE Trans. on Speech and Audio Processing*, Vol. 8, No. 6, pp. 676-687, Nov. 2000.
37. C. Tillmann, S. Vogel, H. Ney, H. Sawaf: Statistical Translation of Text and Speech: First Results with the RWTH System. *Machine Translation*, Vol. 15, pp. 43-74, 2000.
38. F. Wessel, R. Schlüter, K. Macherey, H. Ney: Confidence Measures for Large Vocabulary Continuous Speech Recognition. *IEEE Trans. on Speech and Audio Processing*, Vol. 9, No. 3, pp. 288-298, March 2001.
39. R. Schlüter, W. Macherey, B. Müller, H. Ney: Comparison of Discriminative Training Criteria and Optimization Methods for Speech Recognition. *Speech Communication*, Vol. 34, pp. 287-310, May 2001.  
**(Best Paper Award)**
40. R. Schlüter, H. Ney: Model-based MCE Bound to the True Bayes' Error. *IEEE Signal Processing Letters*, Vol. 8, No. 5, pp. 131-133, May 2001.
41. J. Dahmen, D. Keysers, H. Ney, M. Güld: Statistical Image Object Recognition using Mixture Densities. *Journal of Mathematical Imaging and Vision*, Kluwer Academic Publishers, Vol. 14, No. 3, pp. 285-296, May 2001.

42. A. Sixtus, H. Ney: From Within-Word Model Search to Across-Word Model Search in Large Vocabulary Continuous Speech Recognition. *Computer Speech and Language*, Vol. 16, No. 2, pp. 245-271, May 2002.
43. P. Beyerlein, X. Aubert, R. Haeb-Umbach, M. Harris, D. Klakow, A. Wendemuth, S. Molau, H. Ney, M. Pitz, A. Sixtus: Large Vocabulary Continuous Speech Recognition of Broadcast News – The Philips/RWTH Approach. *Speech Communication*, Vol. 37, No. 1/2, pp. 109-131, May 2002.
44. H. Ney: Maschinelle Sprachverarbeitung – Der statistische Ansatz in der Spracherkennung und Sprachübersetzung. *Informatik-Spektrum*, pp. 94-102, May 2002.
45. L. Welling, H. Ney, S. Kanthak: Speaker Adaptive Modeling by Vocal Tract Normalization. *IEEE Trans. on Speech and Audio Processing*, Vol. 10, pp. 415-427, Sep. 2002.
46. D. Keysers, J. Dahmen, H. Ney, B. Wein, T. Lehmann: A Statistical Framework for Model-based Image Retrieval in Medical Applications. *Journal of Electronic Imaging, Special Section on Model-based Medical Image Processing and Analysis*, Vol. 12, No. 1, pp. 59-68, Jan. 2003.
47. W. Macherey, J. Viechtbauer, H. Ney: Probabilistic Aspects in Spoken Document Retrieval. *EURASIP Journal on Applied Signal Processing*, Vol. 2003, No. 2, pp. 115-127, Feb. 2003.
48. F. J. Och, H. Ney: A Systematic Comparison of Various Alignment Models. *Computational Linguistics*, Vol. 29, No. 1, pp. 19-51, March 2003.
49. C. Tillmann, H. Ney: Word Re-ordering and a DP Beam Search Algorithm for Statistical Machine Translation. *Computational Linguistics*, Vol. 29, No. 1, pp. 97-133, March 2003.
50. S. Molau, D. Keysers, H. Ney: Matching Training and Test Data Distributions for Robust Speech Recognition. *Speech Communication*, Vol. 41, No. 4, pp. 579-601, Nov. 2003.
51. F. Casacuberta, H. Ney, F. J. Och, E. Vidal et al.: Some Approaches to Statistical and Finite-State Speech-to-Speech Translation. *Computer Speech and Language*, Vol. 18, No. 1, pp. 25-47, Jan. 2004.
52. D. Keysers, W. Macherey, H. Ney, J. Dahmen: Adaptation in Statistical Pattern Recognition Using Tangent Vectors. *IEEE Trans. on Pattern Analysis and Machine Intelligence*, Vol. 26, No. 2, pp. 269-274, Feb. 2004.
53. A. Toselli, A. Juan, J. Gonzalez, I. Salvador, E. Vidal, F. Casacuberta, D. Keysers, H. Ney: Integrated Handwriting Recognition and Interpretation using Finite State Models. *Int. Journal of Pattern Recognition and Artificial Intelligence*, Vol. 18, No. 4, pp. 519-539, June 2004.
54. S. Nießen, H. Ney: Statistical Machine Translation with Scarce Resources Using Morpho-syntactic Information. *Computational Linguistics*, Vol. 30, No. 2, pp. 181-204, June 2004.
55. T. Lehmann, M. Güld, C. Thies, B. Fischer, K. Spitzer, D. Keysers, H. Ney, M. Kohnen, H. Schubert, B. Wein: Content-based Image Retrieval in Medical Applications. *Information in Medicine*, Vol. 43, No. 4, pp. 354-361, 2004.
56. F. J. Och, H. Ney: The Alignment Template Approach to Statistical Machine Translation. *Computational Linguistics*, Vol. 30, No. 4, pp. 417-449, Dec. 2004.
57. F. Wessel, H. Ney: Unsupervised Training of Acoustic Models for Large Vocabulary Continuous Speech Recognition. *IEEE Trans. on Speech and Audio Processing*, Vol. 13, No. 1, pp. 23-31, Jan. 2005.

58. M. Hilger, H. Ney: Quantile Based Histogram Equalization for Noise Robust Large Vocabulary Speech Recognition. IEEE Trans. on Speech and Audio Processing, 2005, in press.
59. M. Pitz, H. Ney: Vocal Tract Normalization Equals Linear Transformation in Cepstral Space. IEEE Trans. on Speech and Audio Processing, 2005, in press.

### 3 INVITED TALKS

#### 3.1 Invited Talks with Paper

1. H. Ney: Dynamic Programming for Speech Recognition. Eighth Int. Conf. on Pattern Recognition, Tutorial Lecture, Paris, pp. 235-262, Oct. 1986.
2. H. Ney: Automatic Speech Recognition in the SPICOS System. Konferenz "VDE-Tage Budapest 1987", Budapest, erschienen in "Hiradastechnika" (ungarisch), pp. 198-201, May 1987.
3. H. Ney: Acoustic Modelling of Phoneme Units for Continuous Speech Recognition. Fifth European Signal Processing Conf., Barcelona, pp. 65-72, Sep. 1990.
4. H. Ney: Automatische Erkennung kontinuierlicher Sprache im Rahmen des Forschungsprojektes SPICOS. Konf. Elektronische Sprachsignalverarbeitung, TU Berlin, pp. 95-102, Sep. 1990.
5. H. Ney, R. Billi: Prototype Systems for Large Vocabulary Speech Recognition. Second European Conf. on Speech Communication and Technology, Genua, pp. 193-200, Sep. 1991.
6. H. Ney: Stochastic Grammars and Pattern Recognition. NATO Advanced Studies Institute "Speech Recognition and Understanding: Recent Advances, Trends and Applications", Cetraro, Italy, Juli 1990, Springer, Berlin, pp. 319-344, 1992.
7. H. Ney, X. Aubert, R. Haeb-Umbach: Overview of the Philips Continuous Speech Recognition System and Evaluation on DARPA RM. US-DARPA Workshop "Artificial Neural Network Technology Speech Program", Stanford University, CA, Proceedings, pp. 83-88, Sep. 1992.
8. H. Ney: Search Strategies for Large-Vocabulary Continuous-Speech Recognition, NATO Advanced Studies Institute "New Advances and Trends in Speech Recognition and Coding", Bubion, Spain, June-July 1993, Springer, Berlin, pp. 210-225, 1995.
9. H. Ney: Modeling and Search in Continuous Speech Recognition. Third European Conf. on Speech Communication and Technology, Berlin, pp. 491-498, Sep. 1993.
10. H. Ney, V. Steinbiss, X. Aubert, R. Haeb-Umbach: Progress in Large-Vocabulary Continuous Speech Recognition, FORWISS-CRIM Workshop, München, Sep. 1994, pp. 75-92, in H. Niemann, R. de Mori, G. Hanrieder (eds.): *Progress and Prospects of Speech Research and Technology*, Infix-Verlag, St. Augustin/Bonn, ISBN 3-929037-91-2, 1994.
11. H. Ney: The Pronunciation Lexicon in Automatic Speech Recognition. Konvens 94 – Konferenz "Verarbeitung natürlicher Sprache", Wien, pp. 3-12, Sep. 1994.
12. S. Ortmanns, H. Ney, A. Eiden, N. Coenen: Look-Ahead Techniques for Improved Beam Search. FORWISS-CRIM Workshop, Montreal, Canada, pp. 10-22, Oct. 1996.
13. H. Ney, S. Ortmanns: Progress in Dynamic Programming Search for LVCSR. IEEE Workshop on Automatic Speech Recognition and Understanding, Sta. Barbara, CA, pp. 287-294, Dec. 1997.



14. H. Ney: Stochastic Modelling of Knowledge Sources in Automatic Speech Recognition. Gesellschaft für Klassifikation, Potsdam, March 1997, pp. 313-334, in I. Balderjahn, R. Mathar, M. Schader (eds.): *Data Highways and Information Flooding, a Challenge for Classification and Data Analysis*, Springer, Berlin, 1998.
15. H. Ney: The Use of the Maximum Likelihood Criterion in Language Modelling. NATO Advanced Studies Institute, St. Helier, Jersey, July 1997, pp. 259-279, in K. Ponting (ed.): *Computational Models of Speech Pattern Processing*, Springer, Berlin, 1999.
16. H. Ney: Statistical Modelling – From Speech Recognition to Text Translation. Int. School on Neural Nets “Eduardo R. Caianiello”, Salerno, Italy, Oct. 1998, pp. 190-215, in G. Chollet, M. Di Benedetto, A. Esposito, M. Marinaro (eds.): *Speech Processing, Recognition and Artificial Neural Networks*. Springer, Berlin, 1999.
17. H. Ney: Stochastic Modelling: From Pattern Recognition to Speech Recognition and Language Translation. DAGM-Jahrestagung (Deutsche Arbeitsgemeinschaft für Mustererkennung), Bonn, Sep. 1999, pp. 325-337, in W. Förstner et al. (eds.): *Mustererkennung 1999*, Springer, Berlin 1999.
18. H. Ney: Stochastic Modelling: From Pattern Classification to Speech Recognition and Translation. Int. Conf. on Pattern Recognition, Barcelona, Vol. 3, pp. 25-32, Sep. 2000.
19. H. Ney: Stochastic Modelling: From Pattern Classification to Language Translation. Data-Driven Machine Translation Workshop, 39th Annual Meeting of the Ass. for Computational Linguistics (ACL), Toulouse, pp. 33-37, July 2001.
20. H. Ney: The Statistical Approach to Spoken Language Translation. IEEE Automatic Speech Recognition and Understanding Workshop, Madonna di Campiglio, Italy, 8 pages, CD ROM, IEEE Catalog No. 01EX544, Dec. 2001.
21. H. Ney: The Statistical Approach to Machine Translation and a Roadmap for Speech Translation. Special Session, Europ. Conf. on Speech Communication and Technology, Geneva, Switzerland, pp. 361-364, Sep. 2003.
22. H. Ney: The Statistical Approach to Spoken Language Translation. Int. Workshop on Spoken Language Translation (IWSLT 2004), Kyoto, Japan, pp. XV-XVI (ext.abs.), Sep./Oct. 2004.
23. H. Ney: Statistical Machine Translation and its Challenges. Special Session, Int. Conf. on Spoken Language Processing (ICSLP 2004), Jeju Island, Korea, pp. 361-364, Oct. 2004.

### 3.2 Invited Talks without Paper

1. H. Ney: Mustererkennung und Spracherkennung. VDMA-Informationsveranstaltung “Sprach- und Mustererkennung”, Verband Deutscher Maschinen- und Anlagenbau e.V., Fachgemeinschaft Büro- und Informationstechnik, Frankfurt am Main, May 1983.
2. H. Ney: Pattern Matching Systems. IEEE Workshop “Frontiers of Speech Recognition”, Harriman, NY, Dec. 1985.
3. H. Ney: Automatische Segmentierung fließender Rede. GLDV-Jahrestagung, Podiumsdiskussion, Gesellschaft für linguistische Datenverarbeitung, Bonn, March 1987.
4. H. Ney: Maschinelle Spracherkennung – Status und Trends. IBM-Hochschulkolloquium “Maschinelle Sprachverarbeitung”, Heidelberg, May 1990.



5. H. Ney: A Prototype System for Large Vocabulary, Continuous Speech Recognition. Konferenz "Voice Systems Worldwide", Hannover, March 1992.
6. H. Ney: Large Vocabulary, Continuous Speech Recognition. ELSNET/ESCA Workshop "Integrating Speech and Natural Language", European Language and Speech Network / European Speech Communication Ass., Dublin, July 1992.
7. H. Ney: Large-Vocabulary Continuous-Speech Recognition. Int. Workshop on Speech Translation. Schloß Dagstuhl/Wadern, Oct. 1992.
8. H.-W. Rühl, H. Ney: How Might Speech Recognition Influence the Future Telephone Network ? COST-232 Workshop, Rom, Nov. 1992.
9. H. Ney: Automatische Erkennung kontinuierlicher Sprache für großen Wortschatz. Kolloquium der DAGA'93, Deutsche Arbeitsgemeinschaft für Akustik, Frankfurt am Main, March-April 1993.
10. H. Ney: Maschinelle Spracherkennung – Status und Trends. Kolloquium "Sprachtechnologie 2000", Bundesministerium für Forschung und Technologie, Bonn, June 1993.
11. H. Ney: Speech Recognition vs. Pattern Recognition. IEEE Workshop on Automatic Speech Recognition, Snowbird, UT, p. 58 (abstract), Dec. 1993.
12. H. Ney: Statistical Methods in Speech and Language Processing. 5-Day-Course in the European Summer School on Corpus-Based Methods, Utrecht, July 1994.
13. H. Ney, U. Essen, R. Kneser: Smoothing and Clustering in Language Modeling. Tutorial Lecture, US-ARPA Workshop "Frontiers in Speech Recognition", Rutgers University, Piscatway, NJ, July-Aug. 1994.
14. H. Ney: Experiments in *m*-gram Language Modeling. Final Day Review, US-ARPA Workshop "Frontiers in Speech Recognition", Rutgers University, Piscatway, NJ, July-Aug. 1994.
15. H. Ney, A. Stolcke: Language Modeling – Portability and Adaptation. Final Day Review, US-ARPA Workshop "Language Modeling", Johns Hopkins University, Baltimore, MD, July-Aug. 1995.
16. H. Ney: Language Modelling and Search – Expert's Summary. IEEE Int. Conf. on Acoustics, Speech and Signal Processing, München, April 1997.
17. H. Ney: Language Modelling and Search for Large Vocabulary Continuous Speech Recognition. Tutorial Lecture, ENST Paris, March 1998.
18. H. Ney: Statistical Machine Translation. Tutorial Lecture, ENST Paris, March 1998.
19. H. Ney: Search for Large Vocabulary Continuous Speech Recognition. Tutorial Lecture, Summer School (ESCA-IIASS-EMSCSC) "Acoustic Speech Processing and Neural Networks for Automatic Speech Recognition", Salerno, Italy, Oct. 1998.
20. H. Ney: Statistical Translation. Tutorial Lecture, Summer School (ESCA-IIASS-EMSCSC) "Acoustic Speech Processing and Neural Networks for Automatic Speech Recognition", Salerno, Italy, Oct. 1998.
21. H. Ney: Stochastic Modelling: From Pattern Recognition to Language Translation. National Symposium of Pattern Recognition and Image Analysis, Bilbao, Spain, May 1999.
22. H. Ney: Large Vocabulary Continuous Speech Recognition. Tutorial Lecture, National Symposium of Pattern Recognition and Image Analysis, Bilbao, Spain, May 1999.

23. H. Ney: Highlights of Eurospeech-99 – Expert's Summary. Europ. Conf. on Speech Communication and Technology, Budapest, Sep. 1999.
24. H. Ney: Dynamic Programming Search and Large Vocabulary Continuous Speech Recognition. DARPA/Bell Labs Workshop-2000 on Spoken Language Recognition and Understanding, Summit, NJ, Feb. 2000.
25. H. Ney: Stochastic Modelling: From Pattern Recognition to Spoken Language Processing. Heraeus-Seminar Physikzentrum Bad Honnef, April 2000.
26. H. Ney: Statistical Translation. Verbmobil – Final Symposium, July 2000, Saarbrücken.

## 4 CONTRIBUTIONS TO BOOKS

1. H. Ney (Dissertation): 'Untersuchungen zur automatischen Erkennung kooperativer Sprecher über Telefon'. Hamburger Phonetische Beiträge, Vol. 42, Helmut Buske Verlag, Hamburg, 1983.
2. H. Ney: 'Methoden der Sprachanalyse', pp. 117-154, 'Verfahren der Mustererkennung', pp. 225-258, 'Sprechererkennung über Telefon', pp. 297-313, 'Wortkettenerkennung', pp. 358-372, in K. Sickert (ed.): *Automatische Spracheingabe und Sprachausgabe*, Verlag Markt und Technik, Haar/München, 1983.
3. H. Boullard, Y. Kamp, H. Ney, C. J. Wellekens: 'Speaker Dependent Connected Speech Recognition via Dynamic Programming and Statistical Methods', pp. 115-148, in M.R. Schröder (ed.): *Speech and Speaker Recognition*, Bibliotheca Phonetica, Vol. 12, Karger, Basel, 1985.
4. H. Ney: 'Automatic Speech Recognition', pp. 735-762, in A.E. Cawkell (ed.): *Handbook of Information Technology and Office Systems*, North-Holland, Amsterdam, 1986.
5. D. Mergel, H. Ney: 'Automatische Erkennung kontinuierlicher Sprache', pp. 108-113, in "Philips – Unsere Forschung in Deutschland", Aachen/Hamburg, 1988.
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